

## Introduction

On the behalf of NSF, I would like to welcome you at the International Dialog on Responsible Nanotechnology R&D. This is the first meeting of government representatives from over 25 countries dedicated to broad societal issues that cannot be addressed by any single country: How can we prepare our world for the emergence of nanotechnology? How can we use the opportunity? And how can we play the role of our fair brokers in the society? The time is right for this discussion. Worldwide government investments for research in nanotechnology have exceeded \$3.5 billion in 2004, nanotechnology products are reaching the market, and concern about the societal implications of this new technology are being voiced with increasing frequency. These concerns must be answered to the public's satisfaction.

In one sense, of course, these concerns are very old. Science and technology have been at the core of human endeavor for as long as we've *been* human. Indeed, human potential and technological development are coevolving, and quality of life has increased tremendously with technological advancements. However, since the antiquity, it has been a perception that technological developments are not friendly to human nature; maybe because of the transforming changes. When the Greek God Prometheus taught humans to use fire and other tools, he also told them that this will bring an "*an eternity of torture.*"

As old as these concerns are, however, they seem to have particular resonance when it comes to nanotechnology—not least because nanotechnology allows us to work at the very foundation of matter, the first level of organization for both living and manmade systems. The potential benefits are large—and so are the potential risks. For this reason, societal aspects need to be fully considered from the beginning.

Moreover, those aspects need to be considered by humankind as a whole. Nanotechnology knowledge, markets and secondary implications do not have borders. This is a main reason that we are having this meeting. We need to balance the promise of nanotechnology and the potential negative implications. Nanotechnology is still at the beginning and this meeting has a unique opportunity to foster a right start. We need to look to how we distribute the research funds to realize most and equitable results, how the nanotechnology may affect human capabilities, the convergence with other technology, what safety measure to take to address the EHS (Environment, health and safety) concerns, and how to promote international balances and exchanges.

But this meeting is only a beginning. I would like to propose a continuing contact through an "international consultative board for responsible nanotechnology". This activity may yield a set of principles, structured priorities, and mechanisms of interaction including sharing data on responsible research and development of nanotechnology.

This is an informal dialog, and we have high expectations that important ideas and connection for the worldwide development of the new technology will emerge. I would like to encourage you to look for the broad picture. The shorter-term concerns are EHS in research laboratories and production sites, and nomenclatures and standards. At the same time, we should pay at least same attention to long-term aspects, such as respect to human right to welfare, integrity, dignity and health. Another challenge is a balance and equitable nanotechnology R&D investment, and its integration with other fields of the economy. Environmental protection and improvement, as well new energy sources, may lead to expanding the limits of sustainable development. Responding and interacting with the public, with various countries of the international community and various organizations may be the ultimate test for the successful introduction of nanotechnology.

It is an honor to have this distinguished group of experts advancing the frontiers of human knowledge here.

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